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EDITORIALS

The Menarche and Its Disturbances

IN the course of one's personal experience, there are certain conditions which present themselves that are so puzzling that the gynecologist can not offer very much in a specific therapeutic way. One of these problems is the disturbances of menstruation in young girls. Irregular, delayed, profuse, diminished and painful periods are not uncommonly met with in young girls. In this group, the sequelae of childbirth, marriage and abortion can be eliminated. Some may be the result of acute infections of childhood, others of constitutional maladies, and a number are of congenital origin. The majority, however, point to endocrinal unbalance. Whether some of the latter result from the former is very difficult to say.

As one reviews the various morphologic and physiologic changes of menstruation, the process is seen to be one of anabolism and katabolism. It is a breaking down of tissue which causes rhexis resulting from the reactions of an internal secretion with an unfertilized ovum. There is a destruction of the endometrium from the failure of the implantation of a fertilized ovum. Although an apparently simple biologic process, still this process involves many activities of other structures such as the ovary, pituitary, thyroid, mammary gland, etc. The female organs are so delicate in their mechanism that disturbed function of one of these participating factors may result in irregularities and disturbances of this complex but apparently simple mechanism. The constant building up of the endometrium preparing to receive the fertilized ovum and the breaking down of its structure when fertilization fails to take place, although a normal manifestation, does not seem to be biologic. The only *rest* the endometrium and involved organs can receive is by repeated pregnancies. This state seems to be true in the animal kingdom but, with humans, social and economic factors come into play and disrupt this biologic mechanism. In the young and unmarried this mechanism normally readjusts itself. However, with marriage or the introduction of sexual influences either by suggestion or reality, this delicate and harmonious machinery becomes disturbed because of such introduction. Contraception will keep this distorted mechanism going for years with no normal physiological *rest*. The delicacy of this process may not be appreciated by the Sangerites. Again, the criminal abortionist is not concerned with the sequelae resulting from the interruption of pregnancy. Sterility, menstrual disturbances and future gynecological surgery are not uncommon results. It is therefore fair to assume that menstrual irregularities result from some intrinsic distortion or disturbed physiologic process of the menstrual cycle. Menstruation is actually the result of the failure of the reproductive function and can be easily distorted from its very onset.

Menstruation can be considered disturbed function in itself since the real function of the pelvic organs is reproduction. The fact is, according to some investigators, that menstruation is frequently preceded by an indefinite number of anovulatory cycles, which substantiates the stated premise. Clinically, the fact that dysmenorrhea does not occur at the onset of the menarche is significant that painful menstruation results only after ovarian activity is manifested. The infrequency of pregnancy at the onset of menstrual life may be explained by anovulatory cycles. This anovulatory phase may explain the rare occurrence of pregnancy in races by whom intercourse

is indulged in from early childhood. The converse is true, when pregnancy occurs in women with functional amenorrhea, as during lactation or the postpartum period. In these cases ovulation takes place.

What is the mechanism of menstruation? It is known that estrogen is necessary for menstruation. The influence of the anterior pituitary results in the production of graafian follicles with liberation of estrogen. This mechanism may be disturbed from the very onset and result in irregularities. Follicular function accounts for the initial onset and periodicity of menstruation and this is specific with each individual. A decreased or increased liberation of estrogen may result in definite reaction on breasts, appendages, adipose distribution, and the voice. This result may follow directly or indirectly, or in conjunction with hyperstimulation or hypostimulation of other glands. It seems that estrogen at various levels has selective activity on other organs.

Clinically, it is a known fact that the delicate menarche is influenced by physical and social factors of wide scope. Physical states and environment can disturb menstruation during early childhood when all the pelvic organs are more easily susceptible. These disturbances are not seen in the animal kingdom. The female of uncivilized races does not manifest emotional distortions which are so common among civilized people. In the management of these cases such factors should be taken into consideration. Explanation of these factors to the patient may play a great role in reestablishing a normal balance of intrinsic factors. The conservative teaching should be physiologic and social therapy rather than endocrinal.

We shall probably have to reckon more and more with endometriosis as a frequent pathologic consequence of flouting the laws governing the menstrual function. Education is the only possible remedy for this evil.

VINCENT P. MAZZOLA

The Nation's Exasperating Death Rate

"NEVER was the general death rate lower or falling more rapidly in relation to all the conditions that affect that rate than now." (*J.A.M.A.*, Oct. 16, 1943.)

"The United States has the lowest death rate on record—10.3 per thousand." (*N. Y. State J. of Med.*, Oct. 15, 1943.)

This improved state of the nation's health makes for a great headache on the part of those who are working so hard to destroy right-wing medicine. It threatens to defeat the left-wingers' best efforts. If only the health of the people were deteriorating inversely to the actual fact! What a break that would be for our friends on the left; our cruel perversity is undoubtedly the cause of great grief and disappointment on their part.

The Spirit of Enterprise

EDGAR M. QUEENY, in his book *The Spirit of Enterprise* (Scribner's, 1943), remarks on pages 172-173 that "Private universities, private hospitals and private charities are typically American. Most European institutions serving similar purposes originated with the church or state. American private hospitals so far outrank any similar service available in any other nation that it is difficult to make comparisons. They have established the standard for city, state and national hospitals, and indeed for all the world."

After reading the foregoing tribute we were taken aback to find the following on page 226: "A huge social program for all industrial employees could be paid for if some of the benefits of future technological progress were captured at the source by an expanded social security tax and used to increase their pensions and provide an adequate living standard when they are temporarily idle due to conditions beyond their control. It could include health and hospitalization insurance for them and their families."

Nothing "typically American" there. The typical American would wish to capture directly some of the benefits of future technological progress at the source himself—in other words, win a fair share of the profits of industry. This gained, he could choose and pay his doctor, just like Mr. Queeny.

Why does Mr. Queeny bring in the state—on the European pattern—after taking pains to point out that the American pattern has worked well independently of the state?

Aside from this, at this stage of the nation's affairs, the book is timely and important.

—Concluded on page 383

OXIDASE IN BIOLOGY AND IN FLYING RESEARCH

PAULO SEABRA

Fellow, National Academy of Medicine
Rio de Janeiro, Brazil

OXIDASE is a complex enzymatic substance that without addition of any peroxide makes oxidation possible under the temperature and other conditions existing in living beings.

This definition automatically excludes catalase and peroxidase which, moreover, are plentifully distributed among all liquids and tissues of the organism, whereas oxidase is only found in certain tissues or cells, thus indicating a definitely specialized function.

In the blood, for instance, only the eosinophils and principally the neutrophils possess oxidase. The variety of enzymic richness in each of these elements as well as their quantity have made rather difficult any comparison between oxidase power in one blood and that of another.

Various studies on the matter have been carried out, namely by Graham (1), Nagel (2), T. von Korka (3) and Fiessinger (4). The latter comes to the conclusion that those studies "did not precisely give the expected results" and that "the method which would permit a judgment on the functional conditions of the leucocyte is still to be discovered."

With reference to my studies on the matter, Professor Hal Downey of the University of Minneapolis has been kind enough to write to me as follows: "You seem to have worked out a good method for determining the intensity of the oxidase reaction which should prove valuable in many situations which can be studied by this method." This method has been accepted by the National Academy of Medicine (Rio de Janeiro) and called "Seabra Oxidase Index" (5).

Paper read on taking chair as an Honorary Member of the Rio de Janeiro Biologic Society, June 19, 1943.

I WORKED this index out relying on and modifying the indirect technique used by Loele (6) for a firm staining of the leucocytes, carriers of oxidase. Neutrophils and eosinophils get their oxidase stained in a more or less intense violet blue, according to enzymatic activity. The different degrees of this intensity in an arbitrary chromatic scale have been given numbers 1 to 6 in my method.

By multiplying the values found in 100 leucocytes by the hundreds of these corpuscles per cubic mm, and dividing the result by 1000 withholding the first decimal point, the figure found is what I called oxidase index.[1]

This index does not relate to the richness in oxidase but to the intensity of oxidase in the blood at the very moment of examination, since in regard to the body enzymes we do not know whether the variations are caused by their quantity or by some elements which stimulate or delay their action, as Ammon (7) well ascertained.

I came to the conclusion that in apparently healthy humans with a negative Wassermann reaction the oxidase index is oscillating between 8 and 20, the ratio being 15.2. In persons with primary syphilis this oscillation has been found to be between 24.8 and 58.5 with a ratio of 30.9.

In patients with primary syphilis under treatment, an evident and even sometimes high rise of the index has been observed at the beginning which then goes back to normal. There we have a phenomenon which may be called "oxidasic shock."

THIS fact is certain but its interpretation is still subject to investigation. It has to be found out whether this phenomenon is caused by the morbid agent, by organic defense or by the therapy.

Oxidase index also led to a certain progress in the knowledge of interference of oxidase in the metabolism of the glucides.

By using Warburg's method of cancerous cell examination, Soffer and

[1] I still have available a few copies in English of the original report which contains the description of the technique and a chromatic scale. I shall of course be pleased to send copies to specialists who would want it.

Wintrobe (8) demonstrated that glycolysis becomes less intensive whenever lymphocytes are prevailing in the blood. The authors did not explain this fact which, however, is not astonishing since glycolysis is induced by oxidation and its catalyzer—oxidase—does not exist in the lymphocyte but in the eosinophil and, principally, in the neutrophil.

It is known, besides, (9) that among the causes of hyperglycemia there is insufficient combustion of sugar on the one hand, and on the other exaggerated oxidation of fats, producing sugar. This gives way to the conclusion that there must exist diabetic patients whose oxidase index is higher and others lower than normal: in any case, this index has to be brought into its normal limits by therapeutic means.

This has been observed for the first time by Pessanha and Lins in their work rewarded with an Academic Prize (10): "It is, therefore, to be expected that other research workers will come to explain the antagonism of these differences and, by duly classifying them, make possible a specified treatment according to high or low oxidase index." That conclusion of these young Brazilian workers has already been proved by Mario Magalhaes (11), thus opening a large way to diabetology.

The picture revealed in tuberculosis is different, as has been shown by Olimpio Gomes in his work which also won a prize (12). My initial observation as to the absence of high rises of the oxidase index in this disease has been confirmed. Besides, Gomes' results concerning healthy individuals have also been lower than my own findings. It has been observed that the index rises according to the degree of the illness; from 13.4 at the beginning to 16.7 in advanced phases, and up to 23.8 in serious cases, whereas in apparently healthy individuals the ratio is 9.4.

GOMES also carried out comparative experiments between oxidase indexes in venous and in arterial blood, encountering a remarkable parallelism in both, except for a little difference toward higher or lower which is being studied.

On the other hand, Dionisio Echave (13) employed this method in Argentina for demonstrating that in cases of lymphocytic leukemia the oxidasic power of the blood is not remarkably altered.

After this retrospection on the "Seabra Oxidase Index" and its possibilities I now come to relate some parallel observations which I made in the course of these investigations.

Most authorities consider that the main function of the polymorphonuclear neutrophil leucocytes is the defense against infections by means of phagocytose. It seemed strange to me, therefore, how the two following corpuscles could live together without interference: the red blood corpuscle (a container filled with the oxygenizing and desoxygenizing substance: hemoglobin) and the granulocyte (another container filled with the substance that catalyzes oxidation: oxidase), and I came to suppose the existence of some physiological function, a certain functional correlation between the granulocytes and the red corpuscles.

MY hypothesis encountered an obstacle in Fiessinger's work (4), who considered that "the hypothesis that leucocytic oxidase goes normally into the plasma does not withstand criticism," since it is "not a vital action" but a "cadaveric phenomenon." As a proof of this thesis (contrary to my own) the author referred to the poorness in oxidase of the plasma and concluded in the following way "We, therefore, cannot see proofs of any oxidase secretion in the normal cell."

Such a conclusion is not astonishing for the year 1923, since Mollerstrom (14) made the same point in 1942, but it cannot subsist any longer until one admits and has proved that oxidase, when physiologically separated from the neutrophil, is adsorbed by the red corpuscle. The latter has been found to be a powerful according to Gedroyc and Koskowski (16), (15) whose active interface in man, according to Gedroyc and Koskowski (16), reaches a total of 3,000 square meters.

This adsorption is still more easily performed "in vivo" where approximation between both corpuscles is still more direct than is seen on the smears. This intimate contact, as we may call it, is visible in the dark field, the blood being neither citrated nor diluted in order to maintain isocolloidal conditions, so that the corpuscles between the smear and the cover glass appear as though between capillary walls. Slides and cover glass must be washed the

day before with alcohol-ether for I observed that the slightest touch on them is enough to immobilize the granulocyte.

On micromovie 1 (Fig. 1) taken in the dark field and untouched, we observe that the neutrophil instead of remaining in the empty space, incessantly endeavors to join the red corpuscles. Whenever it leaves a group of red corpuscles it is only to meet another one. On other occasions the granulocyte does not move but sends out a pseudopodium which is extended until it reaches a red corpuscle and is then withdrawn (Fig. 2).

IT could be said that this does not represent a spontaneous action but that it is a question of an electric charge since we know that the leucocytes are indeed charged with electricity. In that case, however, after having established contact with a red corpuscle the leucocyte should

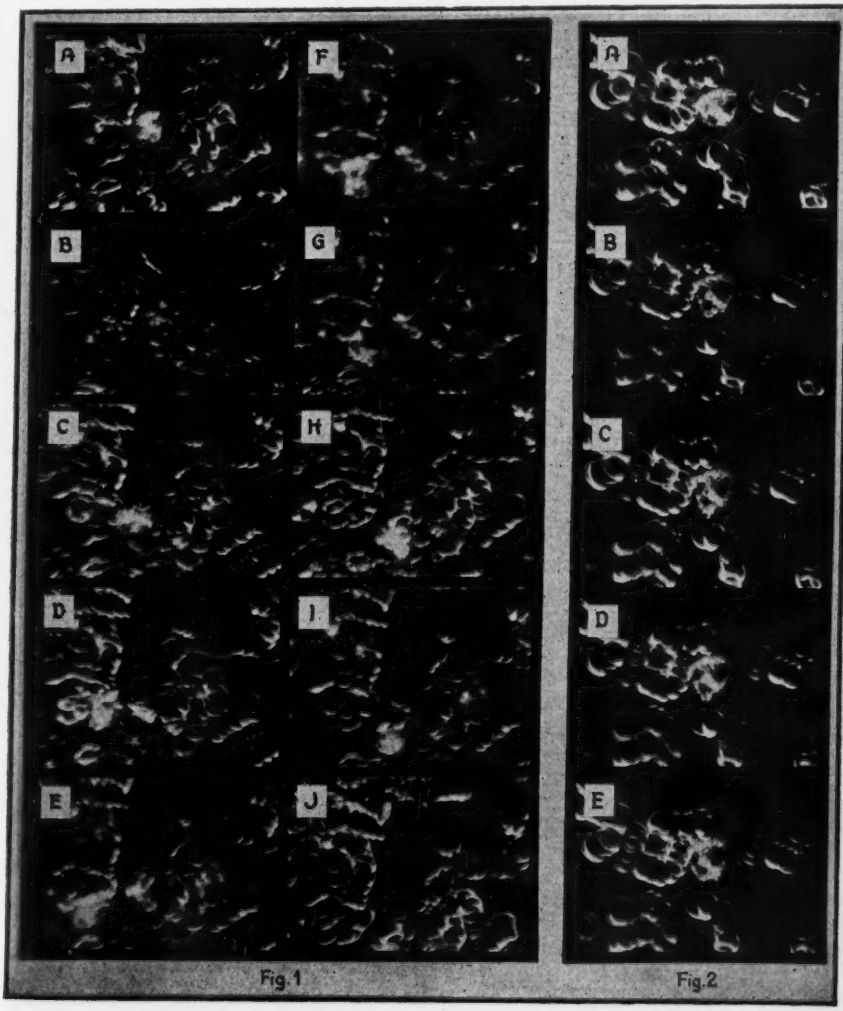


Fig. 1 Fig. 2

again become inactive or should reject others because it would get charged in the same way. This does not happen, however, since the leucocyte still goes on looking for contact with red corpuscles. This attraction may also be attributed to superficial tension but this would make us believe that the attraction of the neutrophil inducing it to get into touch with the red corpuscle is then stopped by a certain interposed substance.

And indeed, such a substance exists: a viscous liquid, slightly visible in the dark field since optically empty, yet detectable to the observer, rejecting and deforming the red corpuscles which had been in contact with a neutrophil. That oxidasic liquid can also be verified on several smears stained with the purpose of determining the "Oxidase Index."

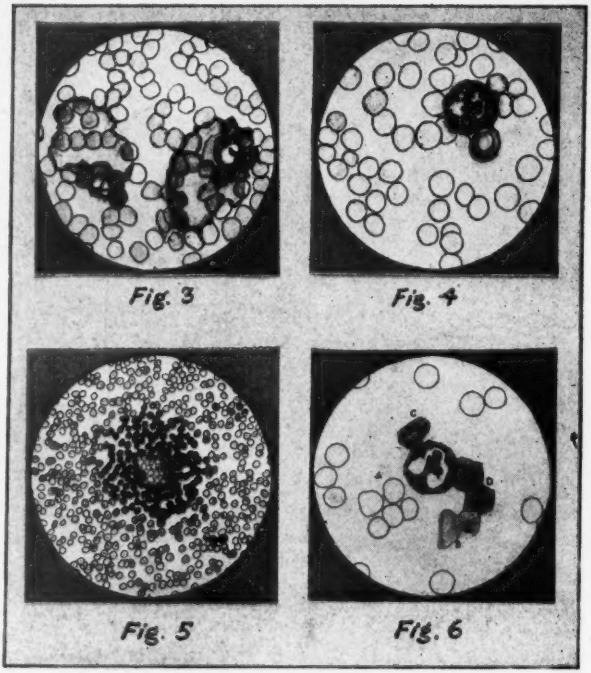


Fig. 3

Fig. 4

Fig. 5

Fig. 6

The case shown on the micromovie (Fig. 1) where the neutrophil is spreading its oxidase over various red corpuscles has been proved by the stained smear in Fig. 3[2], and the case appearing in Fig. 2 where the granulocyte is concentrating its oxidasic discharge on a single red corpuscle has been illustrated by the stained smear in Fig. 4.

This spreading of oxidase has nothing to do with exteriorization of oxidasic granules as Schultz reported and Katsunuma (17) worked out, and what occurs in the degenerating process of the granulocyte or in its crushing, in the very moment of its extension on the smear. This crushing has been called "éclatement" (explosion) by Fiessinger (4) and has also been confirmed by Pessanha and Lins (10).

THE mechanical crushing of the leucocytes leaves the granules dispersed but unbroken, without oxidasic spreading, because the granules, maybe immature, are dispersed but not broken. This bursting of the leucocytic granulations constitutes a normal phase with its own properties independent of the laboratory worker who, moreover, may observe it.

In the smear reproduced in Fig. 4 we can observe how the oxidase after being exteriorized by the granulocyte is adsorbed by the red corpuscle. In this smear we see a leucocyte brought together with a red corpuscle by means of the enzymatic liquid, thus forming a true blue cover.

The following problem now remains: Have we here an isolated phenomenon or an exacerbation of something normal? The latter view is the one I have adopted since the beginning of my investigations on the matter.

Here again I wish to quote Fiessinger, not with the purpose of criticizing but of interpreting his words saying that "at provoking a reaction on blood smears,

[2] The blood smears mentioned above have been projected by the author at the Rio Biological Society where the audience could quite clearly observe them, and now they are again in his files. In the present publication these smears are seen in form of drawings where pictures not represented by lines are oxidasic stainings.

leucocytes are the only ones which give a reaction at all and, besides, only those with neutrophilic or eosinophilic granulations." This statement, which is general among most authorities, means that the red corpuscles do not possess oxidase by themselves, but it does not exclude the possibiilty of the viscous liquid forming a thin film, as shown in Fig. 4, only much thinner, so that it could escape observation by the technique employed up to now, and in variable proportions according to individuals or circumstances.

THIS may also explain why blood taken from different people that had been stained for the determination of the "Oxidase Index" at the same time and with the same technique, becomes more or less blue.

The enzymic nature of the mentioned thin film covering the red corpuscles can be made evident by heating, since between 50 to 60° C. enzymic phenomena become intensified and disappear at 100° C.

Heating a smear in order to compare it with another did not seem very demonstrative because of the existing and supposed errors, and I was, therefore, looking for a method which could allow simultaneous observation in one microscopical field for all three phases of that phenomenon, that is:

a) red corpuscles not heated, which consequently would present normal color;

b) red corpuscles heated to 50 or 60° C., which consequently would show no violet staining at all.

With that in mind I built a device by which a steam jet was thrown through a very fine injection needle, heating the center of the glass slide, thus producing a colorless point with an intensely stained edge at its borders, this intensification being due to the slight heating obtained from the conductibility.

SUCH a picture—the colorless point and its intensely stained edge—would appear incrusted in the homogeneous field formed by the red corpuscles with normal staining (Fig. 5)[1].

[1] For this experiment I diluted the mordant in equal parts of alcohol. The gentian violet solution has been employed only during 10 seconds. No fuchsin has been used. The heating is effected during one hour with steam at seven pounds of pressure.

Chart 1

Hypereffusion Test

Fifty apparently healthy workers

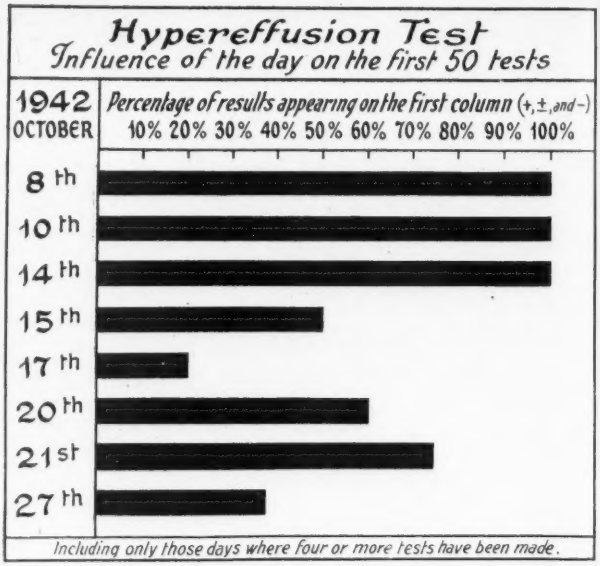
DATE	No.	NAME	RESULTS				DATE	No.	NAME	RESULTS			
1942							1942						
October 1	1	P. S.				±	October 20	28	J. M.				+
5	2	H. K.				−		29	B. M.			+	+
	3	L. M.				+		30	M. P.				−
8	4	L. C.				±		31	B. S.			+	+
	5	D. S.				±		32	A. S.				+
	6	M. R. G.				±	21	33	N. A.				−
	7	J. V.				−		34	N. F.				−
	8	H. P.				+		35	I. M.				+
	9	C. S.				−		36	Y. C.				±
10	10	C. B.				+		37	L. B.				−
	11	V. P.				−		38	M. C.			+	+
	12	N. V.				+		39	D. B.				−
	13	L. O.				−		40	S. S.			+	+
14	14	A. C.				−	27	41	L. N.				−
	15	H. B.				±		42	E. M.		+	+	+
	16	A. P.				+		43	L. R.				−
	17	M. A.				±		44	E. S.	+	+	+	+
	18	V. M. V.				−		45	F. P.		+	+	+
15	19	W. R.				+		46	P. F. M.			+	+
	20	A. N. L.			+	+		47	I. S.		+	+	+
	21	I. I.				−		48	O. C.				+
	22	I. S.			+	+	29	49	L. C.				+
17	23	A. V.			+	+		50	V. F.		+	+	+
	24	I. M. S.				+							
	25	O. S.		+	+	+							
	26	A. C.			+	+							
	27	L. C.			+	+							

RESULTS APPEARING ONLY ON THE FIRST COLUMN (−, ±, and +).....68%
RESULTS APPEARING ON THE OTHER COLUMNS ALSO (++, +++ and ++++)..32%

After having performed this experiment on a large number of smears I can affirm that there exists a close functional relationship between red corpuscles and granulocytes: the latter produces the oxidasic effusion whereas the former adsorbs the enzyme.

Oxidasic effusion normally proceeds gradually so that oxidase, which has already been called a "respiratory ferment," is uniformly spread over all red corpuscles. Many functions, however, can be transformed into hyperfunctions and this also happens with oxidasic effusion which, when exaggerated, becomes hypereffusion.

There we have discharges of oxidase which are so abrupt that its distribution gets irregular and the greater part goes to the red corpuscles next to the place of discharge.



Graph 1

Besides the hypereffusion pictures already mentioned (Figs. 3 and 4), one can now see the smear in Fig. 6, where the phenomenon is particularly obvious and specially demonstrative because in the neutrophil it shows the empty space left by two granulations whose lysis did produce hypereffusion.

THIS smear may give an idea of the possibility of establishing a scale for the different degrees of hypereffusion, considering it "negative" when all the red corpuscles are identically unstained (as "A" in Fig. 6); "slightly positive" when only one or a few less stained red corpuscles are visible ("B"); "average" when they are like those appearing in "C"; "Intense" when hypereffusion is so strong that the central concavity of the red corpuscles becomes dark ("D").

For estimation and comparison of different cases I had to establish certain norms for "Hypereffusion Test" which are now set up in the following way:

Examine four distant fields containing granulocytes in the center of the smear and also four distant fields on the borders, on both borders if possible. Observe the most intense points of hypereffusion in both groups of fields or, if so, its non-existence. Every field already registered must be replaced by another more intense, eventually found nearby.

Results: "very strong" (++++) when hypereffusion is intense in almost all eight fields; "strong" (+++) when hypereffusion is found in the center and on the borders of the slide, effusion being intense either in the center or on the borders or average in both; "average" (++) when intense hypereffusion is found only on the borders of the slide or slightly positive as well on the borders as in the center; "weak" (+) when hypereffusion is slightly positive either on the borders or in the center; "doubtful" (±) when a weak hypereffusion is exceptionally found in one or another of the granulocytes; "negative" (—) when none of the preceding pictures are seen.

UNTIL now I made this "Hypereffusion Test" with only a few more than 2,000 slides, having in my laboratory at the disposal of any worker who might be interested in undertaking closer investiga-

Chart 2

Hypereffusion Test

Individual stability according to glandular conditions

Glandular interferometry, results in drum divisions

Unstable E.S.		Less Unstable S.P.		Stable J.V. and H.M.	
Thyroids	1 1	Thyroids	2 3	Thyroids	3 3
Parathyroids	2 3	Parathyroids	1 1	Parathyroids	1 2
Total Hypophysis	3 4	Total Hypophysis	2 2	Total Hypophysis	1 3
Suprarenal	2 2	Suprarenal	3 3	Suprarenal	3 3

N.B.—The second examination was made two months and a half after the first.

tions on the matter, about 16,000 duly registered microscopic fields. This is a small quantity for a definite conclusion and the results I am now going to present have, therefore, only the character of a preliminary report; I am presenting them in the hope of stimulating the interest of prospective fellow workers.

My initial project has been to determine the normality of this test and I have been fortunate enough to get the cooperation of about 1000 people regularly working at our Institute.

As you will see in Chart 1 which refers to the first lot of 50 tests, 68% of the results remain in the first column, that is, are either negative, doubtful or slightly positive (—, ± or +), whereas the remaining 32% are divided in average, strong and very strong (++, +++ or ++++).

There has been one fact, however, which roused my attention in a rather troublesome way, gradually as the results appeared: a deviation from the first column of results (—, ± and +) appearing in several people at the same time as though they were parts of a series having the same kind of organic troubles. My research for a proof of this hypothesis did not give any definite results. A close examination of these series, however, revealed that the deviations were dependent on the dates, as you will see in Graph 1, according to which those percentages lose any regularity because they would have been absolutely different if all

Chart 3

Leucocytic oxidase in cases with hypo- and hyperthyreosis

Patients from the Department of Endocrinology

General Polyclinic—Rio de Janeiro

HYPOTHYREOSIS			HYPOTHYREOSIS		
NAME	OXIDASE IN 100 LEUCOC.	Ratio	NAME	OXIDASE IN 100 LEUCOC.	Ratio
S.F.	186,0		D.M.	248,5	
C.S.B.	104,5		N.N.C.	242,0	
F.B.	188,0		E.A.G.	217,5	
B.B.B.	228,5		D.P.	193,0	
S.G.	166,0				
L.V.N.	188,0				
		176,8			225,2

the 50 tests were made on the 8th, 10th and 14th of the month.

FINDING no explanation for this observation, neither in a faulty preparation of the reagent nor in the temperature, etc., I then drew blood from three girls and three young men, all apparently healthy, every morning at 8 a.m.

Results of these tests made during a period of 2 months are found in Graph 2, where they form vertical groups with two large columns for every individual: one for "normal" (—, ± and +) and the other for "abnormal" (++, +++ and ++++) results.

You will note that they are oscillating practically every day: Some individuals are rather stable, showing little variations scarcely going beyond normal, for instance those named J.V. and H.M. Others are less stable, frequently exceeding normal lines, like S.P. and E.S.

In order to find out whether or not these properties of a lower or higher stability in hypereffusion have any endocrinic reason, I asked Prof. Helion Povoa to test two specially stable and two particularly unstable individuals by means of endocrinous interferometry, as shown in Chart 2, where it can be observed that even in healthy humans there exists a tendency to hypothyreosis in the less stable and to hyperthyreosis in the more stable.

Accordingly I proceeded to test some typical hyperthyroid and typical hypothyroid individuals. Thanks to the cooperation of Prof. Peregrino Junior who provided me with blood samples taken from various patients at the Department of Endocrinology of the Rio de Janeiro General Polyclinic, I came to the conclusion seen in Chart 3, where you will see proved the fact that patients who are unstable in oxidasic hypereffusion show also a deficient action of the thyroid body since they retain less oxidase in the leucocytes whose ratio is 126.8; in patients with hyperthyreosis, however, the ratio is 225.2. These figures show (with a statistical value of 95%) that thyroidal equilibrium exerts a certain influence of the oxidasic stability of the leucocyte.

HAVING thus established the relationship between the endocrinic conditions and the unstability of oxidasic hypereffusion, we now come to examine Graph 2.

According to the hypothesis that Graph 1 shows, I found that, in fact, the oxidase effusion which I had already determined to be a physiological process, is in every tested individual more inclined to hypereffusion on certain days than on others. This tendency is frequently observed in individuals whose hypereffusion tests result unstable, but also sometimes in those who present stable reactions to this test.

Since this tendency is general I was ready to believe in the influence of some cosmic factors independent of individual conditions.

Among possible influences of winds, of brightness of light, of electricity, of barometrical variations and so on, it was the latter which seemed most important to me as I remembered an observation I made in 1927 regarding cerebral oxidase, which I take the liberty of quoting here:

> "August 10th.
>
> "I found out a method to break the cellular membrane: place the cerebral pulp into distilled water and submit it successively to a vacuum and to compressed air. This procedure gave the same result as that of trituration with sea sand as advised in the manuals, that is, an intensely positive reaction, which has still the advantage of producing a much less muddy liquid.
>
> "In analogy to 'autolysis' I call 'barolysis' this procedure of extracting enzymes."

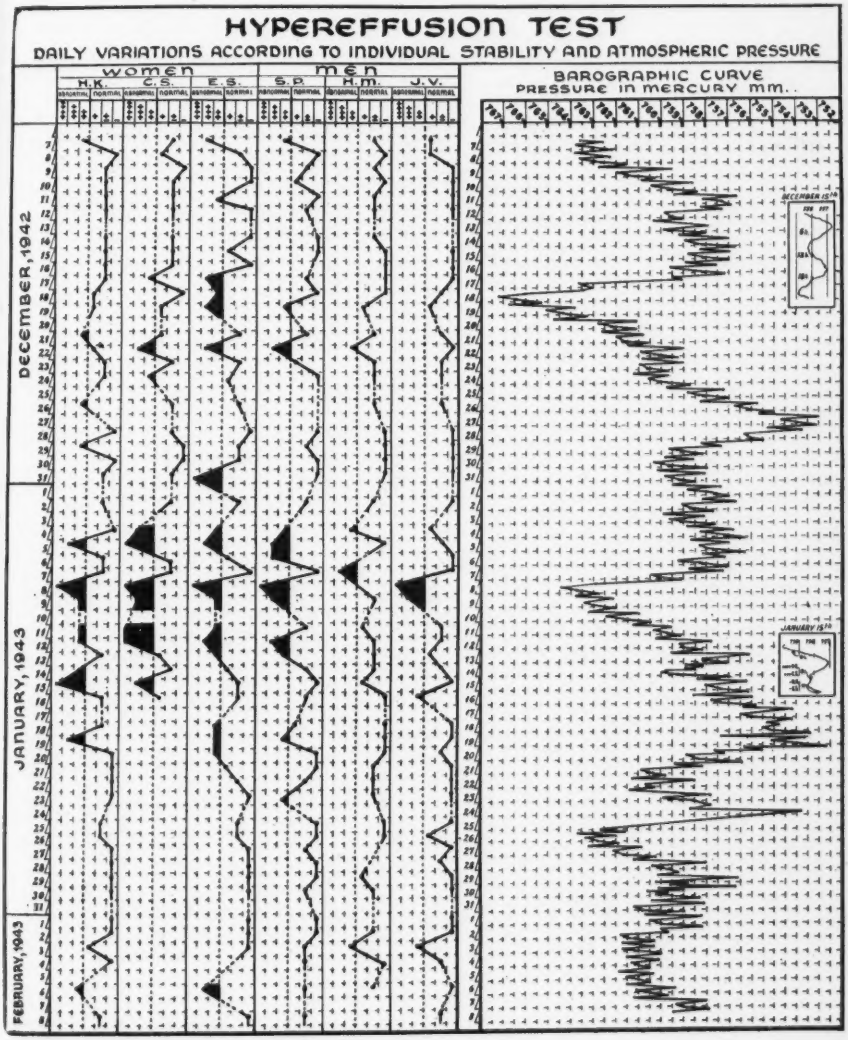
Therefore believing in an eventual relationship between both phenomena, I asked Dr. Francisco de Souza, Director of the Brazilian Meteorologic Station, for a copy of the barographic tracings corresponding to the months of December and January last, with the purpose of confronting them with the curves of my hypereffusion tests, as shown in Chart 2 already mentioned above. There we see indeed that the periods of barographic and that of oxidasic regularity appear in parallel form as for instance from December 12th to 16th and from December 29th to January 3rd.

During periods of appreciable rise of pressure, as from December 17th to 18th where compression reached 10 mm. with subsequent intensive depression exceeding 14 mm. from December 18th to 27th, all tested individuals showed hypereffusion with exception of the most stable of them, J.V., who too, however,

did not withstand the subsequent compressive-depressive period between January 7th and 19th.

There we have the general picture, but a closer examination of the tables still gives us much information. We see, for instance, that on days where no oxidasic hypereffusion but only effusion has been observed (December 15th, for instance) the barographical tracings show a rhythmical alternation of slight compressions with slight depressions. That means that the barolysis I employed in 1927 corresponds to the process of oxidasic effusion from the polynuclear leucocytes which occurs twice a day.

Graph 2



BEGINNING with December 15th, we note a progressive rise to atmospheric pressure provoking an accumulation of oxidase in the leucocytes ready to be poured out at once, proportionally to individual stability. Consequently, simultaneously with the first depression of 2.5 mm. on December 17th, the result of the test has been "strong" in E.S., the least stable among the tested people, and "average" in C.S. The others show themselves under the influence of great depressions as for instance S.P. on December 19th, H.K. on 21st, H.M. on 22nd where depression reached 8.3 mm., whereas J.V., the most stable, withstood the whole crisis, only showing a weak hypereffusion.

Graph 2 also demonstrates that hypereffusion tests are variable not only daily but hourly. Every day blood has been drawn at 8 a.m. On December 11th, for instance, everybody gave normal results except E.S., whose blood has been taken at 12:30 only, exactly when there happened to be a notable atmospheric depression. The same thing occurred on December 31st.

On January 15th, however, the opposite case could be observed: H.K. and C.S. showed "strong" and "very strong" hypereffusion. I again drew blood samples from these two, at 12 a.m. the same day, and their results were "negative." This change rather surprised me since I had not seen the corresponding barometrical tracings which indeed revealed that before 8 a.m. that day a depression had taken place and was immediately followed by a compensated period lasting until noon, when the second blood tests were made.

I referred above to a probable immaturity of the granulations perhaps hindering their breaking upon crushing. Now we are able to see clearer in this problem, because we know that after a long period of normal conditions hypereffusion occurs even at relatively insignificant barometrical compressive-decompressive alternations. We have seen, for instance, that the rise by 3 mm. and the fall by 1.4 mm. between January 7th and 8th have been sufficient to effect all the tested people, including J.V., in whom such a coincidence between atmospheric conditions and the inherent qualities of the leucocytes had not become evident during the whole preceding month. This made us think that under these circumstances the number of granules ready to burst has been great.

Chart 4

Hypereffusion Test

Mentally unstable patients during periods of calm & agitation

Period of	Patients	Diagnostics	Results ++	Results +	Results +−	Results −
Calm	A.	Alcoholism and epilepsy				x
	M.C.	Paranoid schizophrenia			x x	
	A.	Manic-depressive psychosis				x x
	F.O.	Autotoxic psychosis			x	
						x
Agitation	L.	Mental debility and schizophrenic reaction			x x x	
	M.C.	Manic-depressive psychosis	x x		x	
	F.P.	Schizophrenia	x		x	
	M.B.	Alcoholism-syphilis		x x		

THE same is true for the contrary: after a general crisis where all the granulations ready to burst exploded hurriedly, it may occur that even rather important barographical oscillations do not provoke hypereffusions as we have seen in the tests made on January 24th to 30th.

Summing up the preceding information we can say that we learned from the close examination of Graph 2 that thanks to slight atmospheric compressions and depressions alternating in an average period of 12 hours, nature is effecting oxidasic effusion from the leucocytes to the red corpuscles. Sometimes, however, this normal rhythm is interrupted by violent rises or falls of barometric pressure bringing about the corresponding hypereffusions.

In this connection my friend Dr. Francisco de Souza informed me about the investigations he had carried on some time ago in cooperation with Professor Juliano Moreira on the subject of the influence of atmospheric depression in certain insane patients, with the result that they were able to foretell at what moment mental depression would occur and to prevent it by administering barbituric drugs in the patients. (By the way, Dr.

Thiers Ribeiro told me that Professor Moreira had suggested this subject for his thesis.)

I, therefore, wanted to test smears taken from the insane in periods of calm and in those of agitation which Dr. José Pinheiro, Director of the Rio de Janeiro Institute of Neurobiology, kindly let me have. Results of hypereffusion tests made with these smears will be found in Chart 4, where it will be seen that periods of agitation in the insane always correspond to a rise of hypereffusions, while in periods of calm the hypereffusion tests give a majority of negative results.

ON barographical tracings we generally note two pressure minima every day about 6 a.m. and 6 p.m. and two maxima about 10 a.m. and 10 p.m. Consequently, during the ascending period, at 9 a.m. for instance, less hypereffusion should be found because the oxidase remains condensed in the granules, whereas in periods of decrease as for instance at 5 p.m., hypereffusions should be frequent according to the bursting of the granulations. Such is, indeed, the picture appearing in Chart 5.

Since exaggerating is one of the classic methods for testing any hypothesis, an animal placed into a vacuum should, therefore, show hypereffusions to an extraordinary extent if atmospheric depression really causes oxidasic hypereffusion.

I therefore tested a monkey and exposed him to progressive diminution of air until he fainted, which happened when pressure reached 602 mm. At this moment I again opened the air stopcock. The monkey recovered and I provoked a new and more intense vacuum, reducing pressure as low as 254 mm. during 5 minutes. Results of this test are shown in Fig. 7 where "A" means the blood before exposure to low pressure, "B" after the first, and "C" after the second vacuum.

Before being exposed to low pressure the neutrophils have been normally rich in oxidase (intensity 4.5) and red corpuscles so colorless that they remained almost invisible. After the first vacuum we note on the smear an explosion of the neutrophil and its granulations whose splinters appear in the form of stained fragments dispersed in the plasma; oxidase removed from the leucocyte is found scattered in agglomerates or assembling red corpuscles which become more stained. After the second vacuum leucocytic oxidase of the neutrophil fell down to 0. Till now I have made the same observation only with blood heated to 100° C. To such high hypereffusion I gave the name of "paroxystic hypereffusion."

THERE are, however, other means for exposing the organism to a sudden fall of atmospheric pressure, as for instance that of reaching high altitudes by speedy flying.

In order to make quite clear the analogy existing here it must be remembered that the first vacuum to which the tested monkey had been exposed corresponds to an altitude of 1,750 meters (5,577 feet)

Chart 5

Hypereffusion Test

FLUCTUATION ACCORDING TO HOURS

(one hour before the first barometrical maximum and one hour after the second minimum)

DATE	HOUR	C. S.	H. K.	E. S.	L. C.	H. M.
3.30.43	9 a.m.	++	++	+++	+	+
	5 p.m.	+++	+++	++	++	+
3.31.43	9 a.m.	++	++	+	++	+
	5 p.m.	++++	+++	++++	+	+++

and the second vacuum which produced the paroxystic hypereffusion corresponds roughly to an altitude of 8,700 meters (28,543 feet).

Now we shall see that a similar phenomenon happens with men in flight. This is illustrated by Fig. 8-A representing a neutrophil belonging to the blood taken from S.P. a few moments before his first flight. It shows normal conditions. At 1000 meters (3,280 feet) a hypereffusion is already noted: the neutrophils show less oxidase which is found, however, in a somewhat remote conglomerate (Fig. 8-B). At 3,500 meters (11,480 feet) hypereffusion has reached its paroxysm; the neutrophils remain without any oxidase of which a little is found not far away so as to stain intensely blue the outlines of several red corpuscles (Fig. 8-C).

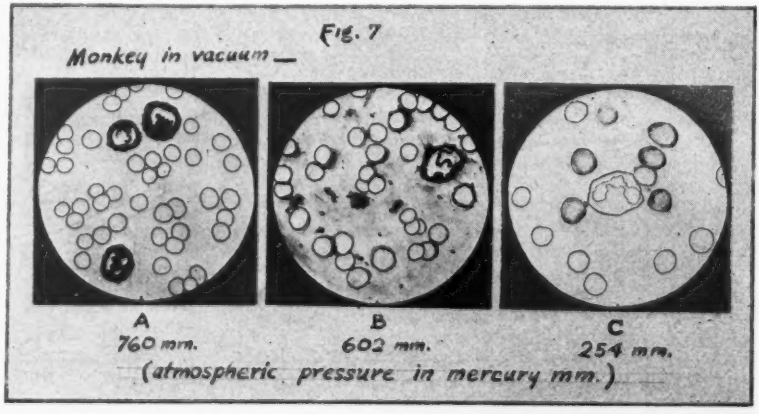
NOW, I remember some North American workers as for instance Sabin, Austrian, Cunningham and Doan (18) who say that "maturation" of the leucocyte of the myeloid series "is accompanied by an increase in the oxidase reaction," a French worker, Fiessinger (4) who notes that the estimation of oxidase in the neutrophil "would allow judging of its functional conditions," and Schlecht (19), a German worker who says that oxidase is a "sign of functional capacity" of the neutrophil in its activity of organic, phagocytic defense. This being true, what about a wounded soldier with a beginning infection being evacuated from the battlefield by plane, if the agents of organic defense are thus reduced until they show a picture like the one in Fig. 8-C?

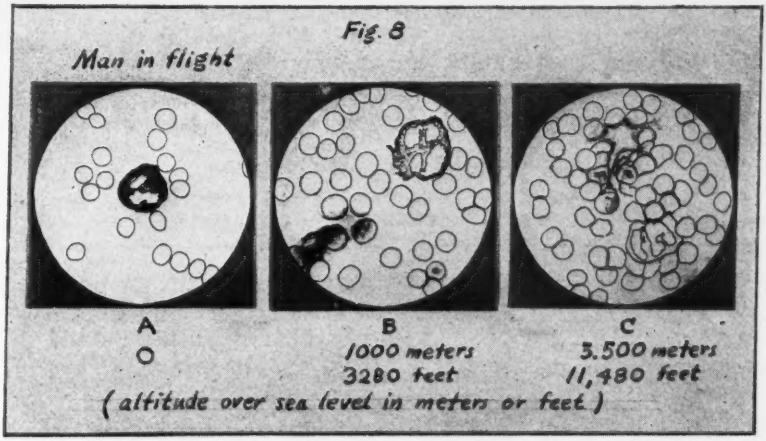
If in this case sudden decrease of leucocytic oxidase constitutes a danger, which is still a hypothesis only, another hypothesis is that this sudden increase of oxidase in the plasma may be the cause of certain healings observed during flights, for instance that of whooping cough.

Through the esteemed cooperation of the Brazilian Air Force, particularly that of Cap. Med. Dr. Gustavo Rego and Med. Lieut. Dr. Waldemar Lins, to whom I wish to express my sincere thanks, several experimental flights have been made on my request. Since all of them gave analogous results I will present here only one of them (Graph 3).

The higher the plane goes up, the greater becomes—quite proportionately—the loss of oxidase in the leucocyte. Reduction of pressure provokes paroxystic hypereffusion of the neutrophils in peripheral blood and at the same time makes the neutrophils from the visceral reservoirs and particularly those from the spleen enter the peripheral blood, so that sometimes a slight increase of leucocytic oxidase can be observed. This happened, for instance, in the test performed with D. and C. at 2,000 meters (6,561 feet) but when the plane went higher, leucocytic oxidase went on decreasing.

AS soon as the plane begins going down, hypereffusion stops; the neutrophils, however, still continue shifting toward peripheral blood as a consequence of the disturbed equilibrium and because atmospheric pressure begins again to rise, thus compressing the above mentioned visceral blood reservoirs.

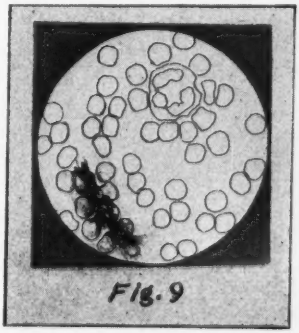




Consequently, the total oxidase in every hundred leucocytes immediately begins to increase, sometimes becoming even higher than it had been before the flight. This explains why on the blood smears taken immediately after the flight we find together with neutrophils whose oxidase is "O", also those which have recently come from the blood reservoirs whose oxidase content is normal or even higher than that of those existing before the flight; thus we can see that the neutrophils resting outside the circulation are richer because they send less oxidase to the red corpuscles.

A few days later the equilibrium is entirely restored.

One can, therefore, suppose that successive flights would finally leave the visceral blood reservoirs devoid of any oxidase-carrying neutrophils to substitute for those which have lost their oxidase in previous flights, and this really happens. I have several smears taken from various flyers early in the morning before leaving the ground for the first time that day. On some of these smears all neutrophils are like the one appearing in Fig. 9, that is, with "O" oxidase. Oxidase, in these cases, is found scattered all over the plasma, either as an independent element or agglutinating red corpuscles.



THIS phenomenon may have a vicarious effect as to respiratory functions of the body and, indeed, young flyers often seem particularly vivid, but, on the other hand, does not such a persistent absence of oxidase in leucocytes represent a danger?

Finally, there is still another aspect of flying which invites close investigation in the field of oxidase. Vignoli (20) reports that many authorities have come to the conclusion that "the glycolytic agent of the blood does not exist in the plasma but in the granulocytes," that is the rule; nevertheless, when this agent—oxidase—shifts suddenly from the neutrophil toward the plasma, a sudden dislocation toward hypoglycemia is to be expected, varying according to individual stability.

My observations have indeed proved this hypothesis. Taking Graph 3, referring to the fourth experimental flight, I wish to make it clear that what may appear as an exception is, on the contrary, a confirmation; the glycemia of flyer G. did not decrease during the flight and as he was the most stable among the tested flyers, he was also the one whose oxidase in the leucocytes did not decrease during the first part of the flight. When such a decrease occurred later, it was already too late to cause an influence upon glycolysis when blood was again drawn from

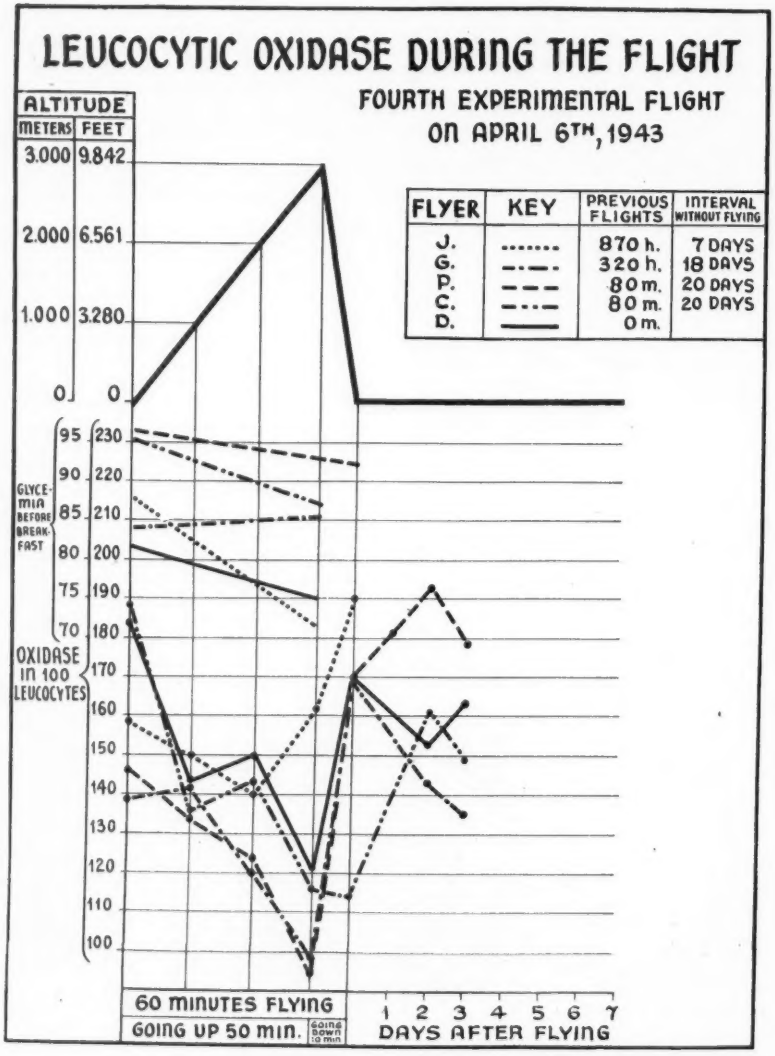
him, since this phenomenon only occurs after hypereffusion.

I also mention flyer J. because his normal glycemia is 88 which decreased to 71; this means in his case beginning hypoglycemia, and hypoglycemia means loss of mental control.

May not this be an approach to lifting at least a small part of the lugubrious veil which covers so many air accidents called "inexplicable?"

More investigations are necessary which undoubtedly will lead to taking various measures, one of which may be that of providing flyers with substantial provisions of dextrose candy.

Graph 3



Conclusions

a) A close functional relationship exists between neutrophils and red corpuscles: the former effecting oxidasic effusion and the latter adsorbing the oxidase or "respiratory ferment;"

b) oxidasic effusion is produced by barolysis which, when strong, produces hypereffusion, varying according to individual stability;

c) there is evidence that this stability is influenced by thyroidal factors;

d) hypereffusion is more intense in moments of atmospheric abnormality, that is, high barometric rise followed by decrease;

e) in those moments an intense shifting of leucocytic oxidase toward the red corpuscles through the plasma takes place. In certain of the insane this phenomenon appears to coincide with mental disturbances;

f) oxidasic effusion occurs generally twice a day, about 6 a.m. and 6 p.m., when the periods of low barometric pressure nearly come to an end, and hypereffusion also happens precisely at these moments;

g) In a monkey placed into a vacuum, paroxystic hypereffusion has been observed, that is, a complete loss of oxidase in the leucocytes which appear colorless, while the enzyme gets scattered over the plasma;

h) analogous paroxystic hypereffusions have been observed with low pressure when flying. There may be seen a danger in the decrease of oxidase content in the leucocytes of wounded people evacuated by plane, but on the other hand the sudden shifting of oxidase toward the plasma may explain occasional healing of certain diseases and may have a vicarious activity; the glycolytic effect of the freed oxidase explains shift toward hypoglycemia in flights. There we have, perhaps, one of the explanations for the hitherto inexplicable air accidents;

i) future investigations will probably establish the following recommendations: flying low or with a pressure-conditioned chamber for the wounded; consideration of oxidasic stability in testing flyers for admission as well as in calculating the periods necessary for their recovery; providing flyers with supplies of dextrose candy.

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MEDICINAE DOCTORIS PRAXIS RESIDUUM

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HAVE you ever looked forward to a post mortem examination in the hope that it would explain some of the puzzling things that occurred during the patient's illness? Sometimes you were satisfied—but quite as often unsatisfied.

Or to look at the matter slightly otherwise: as a young doctor I used to envy the older men for their access to so many case histories; and I wondered why they didn't publish more of their experiences. As I grew older I guessed the answer. After I retired and had a chance to review my case records I learned it: Neither the post mortem examination nor the case history provides all the answers.

Mackenzie spoke of the need of twenty years of observation to understand a case. Even twenty years is not long enough to understand some case records. Why? Too many factors—or bits of information—are missing.

WHY do I speak so positively? Here is my story. In 1940 I retired after 38 years of teaching and practice. I brought with me into my retirement the histories of those patients who had died between the wars (1919-1940), for my previous records were scattered by my changes from institutional to private work and again to military service. I found that I had 248 records. Of these 25 covered twenty years or more. The analysis of these 25 cases brought disappointing results.

But a quick summary of the whole group (248) may be of interest to younger men gifted with some degree of historical curiosity. So here it is.

OF the 248 case histories found worth transcribing the predominant group was the cardiorenal—as should be the case in records covering the final stages of their lives. The whole group numbered 87.

Arteriosclerosis had a determinant influence on the outcome in some 56 cases—although, of course, the organ or part involved varied from case to case.

Hypertension seemed probably to be differentiated from arteriosclerosis and worth distinct classification in 17 cases.

The thyroid was involved as a cause of the morbidity and probably of the fatal outcome in 7 cases.

TWELVE people could be classified as neurasthenics. Some were asthenic but nevertheless carried on well. Others were carping and fault finding: making others miserable apparently because they themselves felt so "mean."

The gastro-intestinal tract was involved in 19 cases. But even in some of these it remained questionable whether the gallbladder or the heart were the more concerned.

The total of the various types of tumors was 25. Most of them were cancer. But one neuroma was so interesting that an account of it had been published by the pathologist. One benign tumor led to death because of the surgery involved.

Metastases of breast cancers proved fatal in 6 cases. There was one primary bronchogenic carcinoma.

Only eight cases of tuberculosis were transcribed. This was due to the fact that wherever possible patients with the diagnosis of pulmonary tuberculosis were sent to more favorable climates, or to sanatoria. Thus my records were incomplete. However, a most interesting case record of abdominal tuberculosis survived—where after an enterostomy pernicious anemia developed.

Five cases of insanity were seen often enough to make their records worth while. Others were of course sent to sanatoria or specialists as soon as recognized. Included among the five is the record of one case of mongolism and also one of epilepsy.

THERE were ten records of what might be called paralysis; three of these being cases of multiple sclerosis, five of paralysis agitans, and two of bulbar paralysis.

Sometimes the records proved to be records in the study of geriatrics: for the old-age phenomena predominated over the organic involvement. These numbered 11.

Seven cases of leukemia were transcribed, and four cases of pernicious anemia. The leukemics made instructive records in

that they showed that death came finally because of intercurrent complications in 6 of the 7 cases.

Syphilis was an important influence in 13 cases. Five of these were taboparetics. Two were cardiacs.

Eleven cases of arthritis are recorded—the death of course being due to organ involvement rather than to the arthritis.

Various diseases of the lungs were important factors in 18 cases. In 9 of these chronic bronchitis or bronchiectasis threw such a burden on the heart that it finally gave away. Eight were pneumonics. Three relatively pure cases of asthma were recorded—but even in these cases, the condition was one of bronchiectasis before death followed.

Alcoholism had an important bearing on the course of the disease in only two cases.

War gas was directly responsible for the death of one man—and that through the injury to the kidneys and the consequent high blood pressure—some 10 years after the gas was inhaled.

DIABETES was important in six cases—but in three of these it might better be called arteriosclerotic glycosuria.

There was one case of acute and one of chronic encephalitis. Of course, some of the five cases of Parkinson's disease (paralysis agitans) might have been due to encephalitis.

Prostatism brought about death—through cardiac breakdown—in one case. But it was present in many cases not transcribed because these patients have been for the last quarter century referred to urologists.

Erysipelas or recurrent erysipeloid was an interesting factor in three cases.

Three records would be interpreted nowadays as cases of avitaminosis. One was definitely classified as pellagra while the others were noted as "malnutrition."

The adrenals seemed involved in four cases. In only two was the involvement proven by necropsy.

Dermatitis exfoliativa seemed to be the cause of death in one case. Here the only antecedent factor was duodenal ulcer.

Esophageal diverticulosis was a factor in one case wherein the patient refused surgical interference.

There were seven records of suicide: one, when a man learned that he had cancer of the tongue; one wherein business and domestic burdens were too heavy; two psychotics and two suffering from chronic abdominal disease.

The ages of the patients at death are, as would be expected, those of the later years—ages of senescence and senility.

NOTHING extraordinary in the catalogue except the absence of acute fevers and communicable diseases. But one is struck by the dissimilarity between subjective complaints and objective pathology. So what? Is it worth while to keep careful protocols? Yes. If I had to start in again, I would keep more painstaking records. They are useful if we can take the time to write them up and occasionally review them.

2600 RIDGE ROAD.

Navy Orders "Sunlight" for Battleship "New Jersey"

THE officers of the new Battleship, U.S.S. *New Jersey*, intend to see to it that the health of its personnel will never suffer through lack of sunlight.

In addition to guns and all the other instruments of destruction, orders have been placed for installation of constructive health-giving ultraviolet ray apparatus that will "shoot" the vitamin D of sunshine into the men. This represents the first time that ultraviolet sunbaths will be made available to the entire personnel of one of our battleships.

Three group solarium type ultraviolet lamps and two smaller solarium units are being placed aboard the *New Jersey*. They are being set up below decks especially to serve men who would be otherwise denied much of the natural benefits of sunshine; in addition the lamps will be used in the sick bays.

United States and British submarine crews have for some time been provided with ultraviolet irradiation, as have the workers in many blacked-out British factories where it has been found helpful in reducing absenteeism. Similar lamps are specified for the newest aircraft carriers.

CONTEMPORARY PROGRESS

MEDICINE

Leukemia

J. D. KIRSHBAUM and F. S. PREUSS (*Archives of Internal Medicine*, 71:777 June 1943) present a study of 123 fatal cases of leukemia in a series of 14,400 autopsies at the Cook County Hospital, Chicago. Classifying these cases according to the type of cell in the peripheral blood, there were 28 cases of stem cell leukemia, 53 cases of myelogenous leukemia, 37 cases of lymphatic leukemia and 5 cases of monocytic leukemia; the relatively high incidence of stem cell leukemia is noted. The leukemia was of the acute type in 26 of the 28 cases of stem cell leukemia; this type of leukemia occurred most frequently in persons under thirty years of age. Other types of acute leukemia, however, occurred frequently in persons in the older age groups, so that the diagnosis of acute leukemia must always be considered in older persons with suggestive symptoms. General weakness, malaise, easy fatigue and anorexia were frequent symptoms in the initial stage of both acute and chronic leukemia; inflammatory and ulcerative lesions in the mouth and throat were noted in 20 cases of acute leukemia, being most severe in the monocytic type. Spontaneous hemorrhage and the hemorrhagic diathesis were commonly observed in acute leukemia. Generalized enlargement of the lymph glands was characteristic of lymphatic and stem cell leukemia; and enlargement of the liver and spleen was most common in myelogenous and monocytic leukemia. Marked anemia was noted in all forms; thrombopenia was often associated with the hemorrhagic diathesis. The white blood cell picture showed considerable variation and fluctuation throughout the course of all types of leukemia; a leukopenic phase may be observed in either the early or the late stage of stem cell and myelogenous leukemia. Hence repeated blood counts supplemented by sternal puncture and bone marrow cell counts are essential to correct diagnosis. Pathologically, characteristic "leukemic infiltrations" were found not only in the liver, spleen and bone marrow, but also in other organs and tissues of the body in many instances; the heart was most frequently involved (43 cases). In treatment, repeated transfusions of blood gave the best results in inducing temporary improvement; roentgen-ray or radium irradiation is "the treatment of second choice," in the authors' opinion. No untoward reaction to transfusion was observed, but in acute leukemia unfavorable reactions were frequently observed after radiation therapy.

COMMENT

The authors well mention the possibility of leukemia in the older age groups. They also stress the importance of repeated blood examinations.

M. W. T.

Magnesium Sulfate in Paroxysmal Tachycardia

L. J. BOYD and D. SCHERF (*American Journal of Medical Sciences*, 206:43, July 1943) report the use of magnesium sulfate in 10 cases of paroxysmal tachycardia and one case of flutter. In 8 attacks of paroxysmal tachycardia, the intravenous injection of 20 cc. of a 10 per cent solution relieved the tachycardia in 3 instances. In 8 attacks in which a 20 per cent solution was given, relief was obtained in all. In most cases the tachycardia ceased either before the injection was completed or else immediately afterward. As a rule the attack subsided "abruptly" with no changes in rate or rhythm, but in 3 instances the rate slowed before tachycardia disappeared complete-

ly. In the case of flutter the magnesium sulfate injection did not produce any change. In the cases of paroxysmal tachycardia, all patients complained of a sensation of "intense heat" immediately after the injection; some complained of dizziness; nausea occurred frequently, but vomiting rarely. Electrocardiograms show that disturbances of conduction and ventricular extrasystoles appear shortly after an intravenous injection of magnesium sulfate, but no untoward effects were observed clinically. The authors conclude that the intravenous injection of magnesium sulfate is a "useful therapeutic procedure" in paroxysmal tachycardia, especially with patients who do not tolerate drugs of the quinine group.

COMMENT

A procedure easily executed and worthy of trial.

M.W.T.

Gold Therapy in Rheumatoid Arthritis

A. E. PRICE and B. LEICHENTRITT (*Annals of Internal Medicine*, 19:70, July 1943) report the use of gold salts in 101 cases of rheumatoid arthritis; gold sodium thiomalate (myochrysine) was used in 91 patients and gold thio-glucose (solganol-B oleosum) in 10; in 2 cases gold sodium thio-sulfate was used to complete a course of treatment begun with myochrysine. The dosage of myochrysine varied during the six year period covered by this report. At first 100 mg. were given weekly, in a few cases twice weekly, for eighteen or twenty weeks; this dosage was later reduced to 50 mg. and then to 25 mg., the latter dose usually being given twice weekly. Gold thio-glucose was given in amounts increasing from 10 to 100 mg. twice weekly until a total of 1.2 gm. had been given in twenty-one injections. Treatment was repeated when indicated, after an interval of two to six months. Some form of toxic reaction occurred in 38 per cent of these patients, occurring after the administration of large doses except in one instance in which the patient had been given 25 mg. of gold sodium thiomalate; a skin reaction was observed in 30 patients. Thrombocytopenia developed in 3 patients with death in one instance. In 14 cases in which the arthritis was classed as mild, 13 patients showed definite improvement, notably in relief of pain and stiffness of the joints; 11 of these patients were followed up within one year and all had maintained the original improvement, but this follow-up period is too short to determine permanent results. In 30 cases of moderate severity, 24 showed definite improvement; relapses occurred in 11 after the first course of treatment, but 8 of these responded well to a second course of treatment; 26 of these patients could be followed up and 18 were found to maintain their original improvement, but the follow-up study was made only one year after treatment in half of these patients. In 57 severe advanced cases of rheumatoid arthritis, 23 cases showed definite improvement, 8 only slight improvement; the principal improvement in this group was in increased joint mobility. A follow-up study was made in 43 of this group, and 13 were found to have maintained the original degree of improve-

ment for more than two years in most cases. The authors conclude that gold is an effective remedy in rheumatoid arthritis, but it must be used only by those having experience with it, as it is "a toxic drug."

COMMENT

The only difficulty with drugs which require experience to use is that many physicians try the experiment without adequate experience.

M. W. T.

The Effect of Glucose Administration In Diabetic Acidosis

H. F. ROOT and T. M. CARPENTER (*American Journal of Medical Sciences*, 206:234, August 1943) report a study of the effect of the administration of glucose in diabetic acidosis. It was found that in diabetics showing acidosis and in the early stage of coma, the administration of glucose intravenously or by mouth did not increase the respiratory quotient and hence did not result in any increase in carbohydrate combustion. The administration of insulin does produce a rise in the respiratory quotient indicating increased carbohydrate combustion. No evidence was found that in diabetic acidosis more than 10 gm. of carbohydrate can be oxidized per hour, even when insulin is given, and no more than this is necessary to reduce the rate of fat metabolism and check ketone body formation. The authors conclude from these studies that the administration of large amounts of glucose in diabetic acidosis is "useless and ineffective' and may be harmful.

COMMENT

A warning from reliable sources.

M. W. T.

SURGERY

The Value of Auscultation of the Abdomen in the Diagnosis of Acute Appendicitis

N. C. STEVENS (*American Journal of Surgery*, 60:365, June 1943) has found auscultation of the abdomen to determine the peristaltic rate a valuable adjunct in the diagnosis of acute appendicitis. At the beginning of an attack of acute appendicitis, auscultation usually shows the peristaltic rate to be increased. But peristalsis diminishes as the inflammation progresses and ceases altogether when the outer coat of the appendix becomes involved. The author states that he has never found "a noisy abdomen" at or near the time of rupture of the appendix in acute appendicitis. In cases of retrocecal appendicitis, peristalsis does not stop entirely but becomes faint and muffled; the sound heard on auscultation is best described as "scratchy." The signs and symptoms of acute appendicitis may be closely simulated by such conditions as spastic cecum with a collection of gas in the right lower quadrant, but in such cases peristalsis is active and increasing, and auscultation is of special value in differential diagnosis. Auscultation should be repeated at intervals over a period of time, from one-half to three quarters of an hour, as peristalsis may be absent at one time and not at another. Illustrative cases are reported.

COMMENT

Acute appendicitis, the most common of acute abdominal catastrophes, still constitutes a formidable challenge to clinician and surgeon alike. Someone has remarked that the most constant feature of its clinical picture is its inconstancy. Any contribution which again rivets our attention upon newer methods of diagnosis is bound to revive interest and enthusiasm in the problem in its entirety. It is thus that progress is made. Auscultation of the abdomen in acute surgical emergencies is not at all new. The wise interpretation of auscultatory findings has proven of value before. Dr. Stevens records satisfaction with his application and interpretation of this method. Many, many diagnostic tests have been published, all too frequently bearing the name of the proponent and said in many instances to be proof positive of appendicitis.

Many determinants dictate the clinical picture in this disease. Mention is made of just two from a list of many, viz.—1. The anatomical location of the appendix. 2. The factor of obstruction. Given the patient soon after the onset of his illness, no one test or combination of tests takes the place of a careful evaluation of a summary of a history well taken and a physical examination thoroughly made. Education of the public and stimulating contributions such as this one will do much to diminish the menace of appendicitis.

T. M. B.

Guide to Replacement Therapy for Loss of Blood or Plasma

H. P. JENKINS and associates at the University of Chicago (*Archives of Surgery*, 47:1, July 1943)) present a chart for use as a guide to replacement therapy in shock due to loss of blood, of plasma, or of both. The chart is based on the hematocrit value and the body weight of the patient—the two variables that can be determined most easily "under emergency conditions." The normal total blood volume is considered to be 2 twenty-fifths of the body weight (on the basis of clinical observations made by one of the authors); the normal hematocrit reading is considered to be 45 per cent. When blood loss predominates, as in hemorrhage, the process of hemodilution may be slow, and the first hematocrit reading may not indicate the extent to which the blood has been depleted, so that the amount of blood for replacement therapy indicated on the chart might not be adequate for complete replacement; it would at least, however, constitute "a good start toward adequate replacement." In cases where plasma loss is the chief factor, as in burns and crushing injuries, the hematocrit reading also represents "the minimum requirements" for replacement. The same is true when both blood and plasma are lost, as in severe fractures or burns with hemorrhage. In all cases the deviations of the hematocrit value below 45 per cent indicate "the least amount" of whole blood or plasma that must be used for replacement therapy. Subsequent changes in the hematocrit readings can be used for the estimation of the total replacement requirements. The use of this chart as a guide for the minimum requirements for replacement therapy should be of special value in "the earlier phase of deficiency in blood volume," before clinical symptoms of shock have developed.

COMMENT

Replacement of blood or plasma lost through injury or disease offers somewhat of a problem; which shall it be and how much? The authors offer a chart for use as a guide. Their suggestion is not complicated and seems practical. Certainly aside from other circumstances associated with each individual case, the hematocrit readings and successive blood counts should establish the exact identity of the need. Assets and reserve should be balanced against loss. Body weight should be noted and considered. Then only can the conclusion be reached as to nature, amount and frequency of replacement therapy. Dr. Jenkins' suggestion that his plan constitutes "a good start toward adequate replacement" is sensible and very good advice.

T. M. B.

The Use of Autotransfusion in Surgery of the Serous Cavities

R. A. GRISWOLD and A. B. ORTNER (*Surgery, Gynecology and Obstetrics*, 77:167, August 1943) report the use of autotransfusion in 100 cases of operation on the serous cavities complicated by internal hemorrhage. In 22 cases, the hemorrhage was due to ruptured ectopic gestation, in the remaining 78 cases to penetrating and non-penetrating wounds of the thorax and abdomen. There were 30 deaths in the entire series, all occurring in the 78 traumatic cases. The highest mortality occurred in penetrating wounds of the abdomen with perforation of a hollow viscus—17 deaths in 25 cases, 68 per cent. There was one fatal reaction to the reinfusion of blood, and in this case there was "a break in the technique" of filtering the blood; there were 2 other instances in which a reaction occurred but was not fatal—a total incidence of 3 per cent of reactions. The authors describe a simple suction apparatus used to collect the blood from the body cavities, which has proved more efficient than "mopping" up the blood. The technique of collecting and filtering the blood, especially filtering, must be "rigid." The authors' experience has convinced them that hemorrhage is "the greatest single factor in the mortality of wounds of the serous cavities;" and that autotransfusion is a valuable adjunct in the treatment of internal hemorrhage. If bile is mixed with the blood, due to injury of the biliary tract or liver, or if there is bacterial contamination owing to perforation of a hollow viscus, the danger or reinfusion of blood from the body cavity is increased, but the authors have found that this danger is not as great as might be expected, and that "the need of blood is frequently far greater than the danger involved," especially when adequate amounts of blood for transfusion are not available.

COMMENT

In the absence of a blood bank, and in the face of the difficulty of obtaining blood and

plasma, attention is again called to the availability of auto-transfusion in cases where hemorrhage has taken place in serous cavities. The blood must be recovered in sufficient quantities, filtered and collected and administered, using a routine technic which will safeguard the patient and forestall serious reactions and infections. If the need were recognized and routine technic elaborated, undoubtedly more patients would be benefited in the peculiar situations such as are reported in this article. For complete success the emergency must be anticipated and the set-up prepared and ready for immediate use.

T. M. B.

Gelatin as a Plasma Substitute

W. M. PARKINS, C. E. KOPP and J. S. LOCKWOOD and associates at the University of Pennsylvania School of Medicine (*Annals of Surgery*, 118:193, August 1943) report animal experiments on the use of gelatin as a substitute for plasma, especially in the treatment of burns. It was found that normal dogs tolerated repeated infusions of large volumes of gelatin-saline solution without any serious toxic reactions due to the gelatin. Immediate infusion with either saline or gelatin solution after a rapid massive hemorrhage resulted in survival of all animals, but the higher total protein concentration of the blood, the greater hemodilution, and the more rapid return of blood pressure to normal following the infusion of gelatine indicated that it was superior to saline in the treatment of hemorrhage of this type. In slow massive hemorrhage, causing death of all untreated animals, gelatin infusions were more effective in treatment than saline effusions, and brought about recovery as rapidly as plasma infusions. In 8 dogs in which burns fatal to untreated and to a majority of saline-treated animals were produced, gelatin solutions corrected hemoconcentration to the same degree as plasma infusions (used in 4 controls); survival of these gelatin-treated animals was prolonged, but all but one died as the blood pressure fell progressively, without hemoconcentration; only one of the 4 plasma-treated animals died. The authors conclude that if a factor can be found in plasma that maintains blood pressure in severely burned animals in the secondary phase of "acute toxemia," this factor added to gelatin would render it a more effective plasma substitute.

COMMENT

The substitution of gelatin for plasma receives attention in this article. The report has to do with favorable results secured through its use in experimental animals. The authors' conclusion is interesting. They state that gelatin solutions lack only the factor found in plasma that maintains blood pressure; that this factor added to gelatin would render it a more effective substitute. Of course, the idea is speculative and the observations were made on laboratory animals. The authors seem convinced that results with gelatin were more satisfactory than with physiological saline in similar circumstances. We await with interest any report that may be forthcoming when and if the method is applied to humans.

T. M. B.

PEDIATRICS

Intravenous Hippuric Acid Test of Hepatic Function in Infectious Diseases of Children

J. MENEGHELLO and M. DRINBERG (*American Journal of Diseases of Children*, 66:103, August 1943) report a study of liver function by means of the hippuric acid test in 16 normal children (as controls) and 128 children with 9 different infectious diseases. In these tests the benzoic acid was given by intravenous injection instead of by mouth, as this was considered to give greater accuracy with diminished toxic effects in dealing with children, and also was a saving of time. With the 16 normal controls the amount of hippuric acid content of the urine voided one hour after the injection of 2 gm. sodium benzoate varied from 1.65 gm. to 0.9 gm. Any output below 0.9 gm. was regarded as pathologic in the study of the 128 children with various infectious diseases. On the basis of this test, there was a disturbance of liver function in 80 per cent of 22 patients with scarlet fever; in 91 per cent of 12 patients with diphtheria; in 27 per cent of 33 patients with typhoid fever; and in all of 6 patients with lobar pneumonia and 5

patients with tuberculous meningitis; the lowest excretion was noted in the last-named disease. In uncomplicated whooping cough, typhus and upper respiratory tract infections, the test indicated normal liver function.

Treatment of Pertussis with Vaccines and Adrenal Cortex Extract

LEWIS JACOBS (*Archives of Pediatrics*, 60:313, June 1943) reports a study of 338 infants and children living in the same district in New York City, who were followed "during their entire course of whooping cough." No specific therapy was employed in 108 of these children, who served as controls; the average total duration of the characteristic symptoms in these patients was: cough, 9.5 weeks; whoop, 5.1 weeks; vomiting, 3.7 weeks. Pertussis antigen was used in the treatment of 126 cases, Sauer's vaccine in the treatment of 42 cases, and a mixture of the two (in equal parts) in 27 cases. All these methods of treatment had a favorable modifying effect on the course and duration of the disease as compared with the controls. However, similar improvement was noted in another group of patients given injections of triple typhoid vaccine, indicating that the therapeutic effect of the pertussis antigen and vaccine was due essentially to "a nonspecific stimulation of antibodies resulting from foreign protein injection." A small group of 15 patients has been treated by injections of ½ to 1 cc. of adrenal cortex; the best results were obtained in this group, especially in reduction of the duration of the cough, although most of these cases were treated at a time when the symptoms in the controls were most severe and prolonged. The therapeutic action of adrenal cortex in whooping cough is also nonspecific and "its mechanism unknown." The author is of the opinion that "further study of the treatment of pertussis with adrenal cortex and with adrenal cortex, plus a high salt intake, is indicated."

Immunization Against Rheumatic Fever

V. P. WASSON and E. E. BROWN (*Journal of Pediatrics*, 23:24, July 1943) report that previous to the fall of 1940, they employed a crude hemolytic streptococcus toxin for immunization of children who had had rheumatic fever against repeated attacks. With this toxin, prolonged treatment was given—at least thirty-eight injections over a period of two years. While the number of attacks of rheumatic fever was definitely reduced in the children so treated as compared with untreated controls, there were occasionally "unpleasant reactions," and the prolonged treatment was "a severe strain on the endurance of the patient and on that of the physician." In the fall of 1940, the authors began the use of a "short method" of immunization, employing Veldee's attenuated (tannic acid precipitated) hemolytic streptococcus toxin, which required only four injections three weeks apart on beginning treatment, and repeating the last (largest) dose semi-annually, beginning six months after the fourth injection. No severe reaction has resulted from this method of treatment. Of 42 patients treated in the winter of 1940-41, none had a recurrent attack of rheumatic fever, while 11 of 33 untreated controls had recurrent attacks with 3 deaths. Of these 42 patients, 31 reported for treatment during the winter of 1941-42; 2 of these developed an attack of rheumatic fever before the prophylactic inoculations were begun; no attacks occurred in those who completed treatment, while 6 of 29 controls developed acute rheumatic attacks. A new group of 38 patients began treatment in September 1941; there was "one possible attack" of acute rheumatic fever in this group during the winter, as compared with six attacks in the control group of 29 children.

Prevalence of Rickets in Children Between Two and Fourteen Years of Age

R. H. FOLLIS, JR. and associates (*American Journal of Diseases of Children*, 66:1, July 1943) report a histological study of the middle ribs to determine the presence or absence of rickets in 213 consecutive autopsies on children between two and fourteen years of age who died at the Harriet Lane Home of the Johns Hopkins Hospital. Rickets was found in 46.5 per cent; it was classified as slight in 23 per cent of the total series, as moderate in 18.7 per cent, and as severe in 4.8 per cent. The total incidence of rickets was but little higher in Negro than in white children, 48.5 per cent as compared with 43.6 per cent; however, the incidence of

moderate and advanced rickets (taken together) was 27 per cent in Negro children as compared with 18 per cent in white children, and advanced rickets was found only in Negro children. It is important to note that these studies dealt with a hospital population, not with "the population at large." Yet as 50 per cent of the children dying of acute disease (of fourteen days' duration or less) showed evidence of rickets, it is probable that rickets was present prior to the onset of the acute disease. These studies suggest that rickets is of frequent occurrence in "healthy-appearing" children. The rickets could be recognized by x-ray examination of the bones in at most 5 instances; this is "not surprising," as the changes at the cartilage-shaft junction which give the characteristic roentgenographic signs are very slight or may be absent in children three years old and over. Thus the rickets in most of the older children in this series "could have given no outward signs of its presence."

CORRESPONDENCE

Endometriosis Versus Conception Control

To the Editor of the MEDICAL TIMES:

I would like to cross swords with the gentleman who discussed endometriosis versus conception control in the October issue of MEDICAL TIMES, page 294, under the paragraph "The Fortune Magazine Poll."

Why should women who desire to have children need to know anything more about endometriosis than they do about gastric ulcer. The knowledge of morbid anatomy and pathology is the physician's forte. The association of relative or absolute sterility to endometriosis is more than a casual one. If Sampson's theory of the cause of endometriosis has merit, any woman who suffers a retrograde menstrual flow into the abdominal cavity is susceptible. Coupled with this theory it is generally believed that the basic factor is a glandular imbalance which results in over activity of the hormones. The relation of sterility to endometriosis is that other pelvic diseases are often found associated with it. The symptoms accompanying endometriosis are menstrual irregularities, pain, vaginal discharge, gastro-intestinal disturbances, headache, loss of appetite, loss of weight, and dyspareunia. All of these complaints frequently accompany frank pelvic infections.

There is no evidence either subjective or objective that the frequent use of contraceptives causes cervicitis. Inflammations of the cervix are often found in virgins. In a study made by the writer several years ago cervicitis was found in 58% of 913 pre-marital examinations.* What was the cause of inflammation of the cervix in these unmarried females? Insofar as cancer originating from the use of contraceptives is concerned what substance is there that, at one time or another, has not been condemned as a carcinogenic agent. The pooling of spermatozoa in the vaginal fornix is still considered by some physicians as a cause of cancer. No proof has ever been offered by the most skilled pathologist of any relation between spermatoxins and malignancy. How does one explain carcinoma of the cervix in virgins? When women in all walks of life can be taught the fundamentals of planned parenthood and the proper use of contraceptives, then the abortion menace will cease. Not, however, because contraceptives predispose to cancer but because abortion is a crime against nature and society.

WALTER M. BRUNET, M.D.

* W. M. Brunet and J. B. Salberg, Cervicitis in Nulliparae, *Med. Record 151*:384-386, June 5, 1940.

Medical BOOK NEWS

Edited by
ALFRED E. SHIPLEY, M.D., Dr. P.H.

All books for review and communications concerning Book News should be addressed to the Editor of this department, 1313 Bedford Avenue, Brooklyn, N. Y.

Applied Physiology

The Physiological Basis of Medical Practice. By Charles Herbert Best, M.D. and Norman Burke Taylor, M.D. Third Edition. Baltimore, The Williams & Wilkins Company, [c. 1943]. 1942 pages, illustrated. 8vo. Cloth, $10.00.

THE plan of the previous editions is followed in presenting a full account of applied physiology, linking the laboratory and the clinic. Many alterations and additions bring the book up to date.

As in the previous editions, the account of the physiology of a part is frequently preceded by a short description of its morphology and its nerve and blood supply.

Universally recognized a leader in the field, the new edition is welcome.

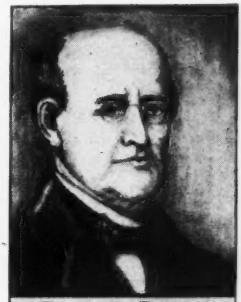
W. E. McCOLLOM

Cardiology for the Laity

Heart Disease is Curable. By Peter J. Steincrohn, M.D. Garden City, N. Y. Doubleday, Doran & Company, [c. 1943]. 193 pages. 12mo. Cloth, $1.98.

THIS little book on heart disease for the layman should be of real assistance. It is written in simple language with numerous plain illustrative cases and which bear a pointed moral. It is cheerful and optimistic and encourages the patient by telling him, for instance, that worry may very well prolong his life because it may make him more cautious and circumspect. It can be read in a short time and is worth the sick patient's re-reading.

A. BABEY



GURDON BUCK
1807~1877

Classical Quotations

● **Extension, maintained as it is by a weight and pulley, with an elastic band interposed, is continuous and self-sustaining; constantly antagonizing the contraction of the muscles, thereby preventing the rough extremities of the bone fragments fretting the soft parts. If applied immediately after the injury, as it may be, the spasmodic twitchings, which are so excruciating, are prevented, and the patient made comfortable from the outset . . . The result of treatment . . . is an increase in the number of adult cases, as well as children, cured without any shortening, and a diminution of the difference of length where shortening of the limb was unavoidable.**

Gurdon Buck

An Improved Method of Treating Fractures of the Thigh: Illustrated by Cases and a Drawing. ***Transactions of the New York Academy of Medicine*** **11, 232-250, 1861.**

Advice for the Medical Student

Doctor in the Making. The Art of Being a Medical Student. By Arthur W. Hamm, M.B. and M.D., Salter, Ph.D. Philadelphia, J. B. Lippincott Company, [c. 1943]. 179 pages, illustrated. 12mo. Cloth, $2.00.

THIS little volume of 175 pages makes a laudable effort to aid the prospective medical student in placing before him "the motives and mental equipment necessary if one is to be a successful medical student."

It discusses in detail many of the various angles of this much debated question. And yet a long and intimate association with medical students raises a doubt in one's mind if all that is contained in this well intentioned book will swerve a single student from his course once he has made his choice.

The millennium indeed will have been reached if all medical students filled the requirements set forth. Men of the largest experience in the selection of students for entrance into medical college will tell of the many many disappointments in their prognostications. And the reverse also is true; many a student rejected by one school has added luster and fame to another. The problem is as varied as is human nature.

S. R. BLATTEIS

Neuroanatomy

A Text-book of Neuro-anatomy. By Albert Kuntz, M.D. Third edition. Philadelphia, Lea & Febiger, [c. 1942]. 518 pages, illustrated. 8vo. Cloth, $6.00.

THIS author has brought his original work up to date in a third edition. The book is well illustrated throughout. The chapter on The Autonomic Nervous System is based largely on chapters I to V of a previous publication by the same author on the same subject.

JEFFERSON BROWDER

Clinical Pathology

Clinical Laboratory Diagnosis. By Samuel A. Levinson, M.D. and Robert P. MacFate, Ph.D. 2nd Edition, Thoroughly Revised. Philadelphia, Lea & Febiger, [c. 1943]. 980 pages, illustrated with 156 engravings and 15 plates. 8vo. Cloth, $10.00.

THIS book thoroughly covers the branches of clinical pathology and also includes sections on the techniques of staining methods for tissues, toxicology and skin tests. The organization of the material by organs is excellent, giving the user ready access to the pertinent techniques of even the most recent tests in current use and their significance. Appropriate and helpful charts are numerous. The inclusion of an appendix covering the preparation of solutions, sterilization methods, conversion factors, atomic weights, etc., makes it especially handy for both laboratory and office use.

A. R. CRANE

Cancer Treatment Popularized

The War on Cancer. By Edward Podolsky. M.D. New York, Reinhold Publishing Corporation, [c. 1943]. 179 pages. 12mo. Cloth, $1.75.

DR. Podolsky has written a book on cancer for the lay public. The sections devoted to the history of cancer and radium are well presented. However, the sypmtoms of cancer as enumerated are apt to alarm the reader. The author is over optimistic in the curability of cancer of the lung and esophagus. He spends too much space in detailed description of questionable methods for the diagnosis and treatment of cancer.

H. MANDELBAUM

War Reactions of the Child

War and Children. By Anna Freud and Dorothy T. Burlingham. New York, Medical War Books, [c. 1943]. 191 pages. 12mo. Cloth, $3.50.

THIS book is the result of the authors' experiences with three wartime nurseries for children in England. The first part discusses the children's reaction to air raids, bombing destruction, evacuation and the mother and child relationships. The authors feel that it is not the actual separation between parent and child, but the form in which the separation takes place to which the child reacts abnormally. In the second part of the book, there are specific case discussions and some conclusions drawn.

This book makes for interesting reading and is recommended to the profession.

STANLEY S. LAMM

Clendening's New Therapy

Methods of Treatment. By Logan Clendening, M.D., and Edward H. Hashinger, M.D. 8th Edition, St. Louis, C. V. Mosby Company, [c. 1943]. 1033 pages, illustrated. 8v. Cloth, $10.00.

AS in previous editions, the aim is to gather widely scattered material from the literature, covering various phases of treatment and to instruct the reader in the technic of various procedures and the rationale behind them. Part I—On General Therapeutics, describes the methods used in treatment and Part 2—the application of Therapeutics to Special Disease. Many new subjects are included in this edition and the sections on Addison's Disease and Amebiasis have been rewritten.

W. E. MCCOLLOM

Disorders of the Digestive Tract

Gastro-Enterology. By Henry L. Bockus, M.D. Vol. I. THE ESOPHAGUS AND STOMACH. Philadelphia, W. B. Saunders Company, [c. 1943]. 831 pages, illustrated. 8vo. 3 vols. to be published, price of set $35.00.

THIS book will be welcomed by those interested in gastro - enterology, whether practitioner or specialist.

In addition to material essential to a text-book much recent knowledge in this subject is included, as well as discussions of a theorectical nature such as that of etiology of ulcer.

Perhaps because of his teaching in a Graduate School the author has an unusual facility for presentation and he has added a wealth of practical material, refined from his extensive experience. This and the chapter on general sypmtomatology make this volume different.

HENRY F. KRAMER

Neuromuscular Growth

The Neuromuscular Maturation of the Human Infant. By Myrtle B. McGraw, New York, Columbia University Press, [c. 1943]. 140 pages, illustrated. 8vo. Cloth, $2.00.

THIS work is a summation of a series of studies begun a decade ago under the direction of Dr. Frederick Tilney.

Quantitative determinations have been obtained on two activities, the Moro Reflex and suspension grasp behavior. There is also a chapter on early sensory development and a final chapter on maturation and learning. It is suggested that maturation and learning are not different processes, merely different facets of the fundamental process of growth.

This book is highly recommended to those of the profession who are interested in the growth and development of the human infant.

STANLEY S. LAMM

BOOKS RECEIVED

for review are promptly acknowledged in this column; we assume no other obligation in return for the courtesy of those sending us the same. In most cases, review notes will be promptly published shortly after acknowledgment of receipt has been made in this column.

Notable Contributor to the Knowledge of Syphilis. By Herman Goodman, M.D. New York, Froben Press, [c. 1943]. 144 pages, illustrated. 8vo. Cloth, $3.00.

The Nature and Treatment of Mental Disorders. By Dom Thomas Verner Moore, M.D. New York. Grune & Stratton, [c. 1943]. 312 pages. 8vo. Cloth, $4.00.

Strabismus. Its Etiology and Treatment. By Oscar Wilkinson, M.D., and Richard W. Winkilson, M.D. 2nd Edition, Revised. Boston, Meador Publishing Company, [c. 1943]. 369 pages, illustrated. 8vo. Cloth, $4.00.

The Science of Nutrition. By Henry C. Sherman. New York, Columbia University Press, [c. 1943]. 253 pages. 8vo. Cloth, $2.75.

Applied Anatomy of the Head and Neck. By Harry H. Shapiro, D.M.D. Philadelphia, J. B. Lippincott Company, [c. 1943]. 189 pages, illustrated. 8vo. Cloth, $5.50.

Tuberculosis as it Comes and Goes. By Edward W. Hayes, M.D. Livingston, N. Y., The Livingston Press, [c. 1943]. 187 pages, illustrated. 12mo. Cloth, $2.00.

Reaction to Injury. Pathology for Students of Disease Based on the Functional and Morphological Responses of Tissues to Injurious Agents. Wiley D. Forbus, M.D. Baltimore, The Williams & Wilkins Company, [c. 1943]. 797 pages, illustrated. 4to. Cloth, $9.00.

Kaiser Wakes the Doctors. By Paul De Kruif. New York, Harcourt, Brace and Company, [c. 1943]. 158 pages. 8vo. Cloth, $2.00.

The Answer Is . . . Your Nerves. By Arnold S. Jackson, M.D. Madison, Wis., Jackson Publications, (Kilgore Printing Company), [c. 1942]. 197 pages, illustrated. 12mo. Cloth, $2.00.

EDITORIALS

—Concluded from page 356

There are barriers, of course, to the complete realization of the true American pattern; were it not for the threat of future wars on a vast scale, with their enormous costs, we could probably establish economic democracy and social equity and not have to consider such plans as Mr. Queeny's for a moment.

The Order of Nature

THE manner in which the sulfonamides, the acridines and the A and B penicillins accomplish their effects upon pathogenic bacteria necessitates the use of descriptive language directly derived from military experience. The white cells are "the body's infantry;" there are citadels of disease, producing bacteria to be stormed; there are strategic highways for storming the citadels; and now there is gas warfare, for Gustav J. Martin of the Warner Institute for Therapeutic Research, speaking recently before the American Chemical Society, explained that the acridines suffocate or asphyxiate bacteria by depriving them of oxygen, while penicillin B surrounds them with too much oxygen, in the form of hydrogen peroxide, which burns the bacteria up.

This being a partial revelation of the order of nature, one wonders whether, after all, it is not the true order of all nature—that warfare is the natural state of man and peace only an ideal, or at best a lull between wars. If we were intellectually honest, instead of hypocritical, we would stand a better chance of arranging for longer interludes between our spells of carnage, for perpetual war, a real danger, would be too suicidal (of course, economic warfare is perpetual). Fighting wars at long intervals, on not too large a scale, and staged somewhat in the manner of sporting events (superfootball), might possess some rather desirable features.

To be sure, we must always bear in mind economic and biologic conflicts, both of which exhibit frightful consequences of inherent and inevitable character. From this point of view there is never any peace. Military combat is not any worse than the other kinds.

Medical Times

The Journal of the American Medical Profession

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SUBJECTS AND AUTHORS

7 GOOD REASONS FOR RELYING UPON Causalin IN ARTHRITIS

Excellent results with CAUSALIN in arthritis, and its relatively high degree of safety, is recorded in a number of clinical papers.* Speedy relief from distress is cited in a majority of patients, one clinician noting "marked improvement" in 70% of 286 cases . . . another finding either noticeable benefits or "complete remission of symptoms" . . . with reduction in periarticular swelling and an increased range of joint motion also reported.

1. *The Med. World, Vol. 54, p. 378, June, 1936.
2. The Med. World, Vol. 54, p. 780, Dec., 1936.
3. Western J. Surg., Obst. & Gyn., Vol. 46, p. 440, August, 1938.
4. Medical Times, Vol. 67, p. 27, February, 1939.
5. Investigation in L. I. Coll. of Med.
6. The Med. World, Vol. 57, p. 448, July, 1939.
7. Clin. Med. & Surg., Vol. 44, p. 61, February, 1937.

CAUSALIN** contains 8-Hydroxyquinolin 5-Sulphonic Acid; Ethyl Salicylate Carbonate; and Aminopyrine (to which an occasional patient may exhibit idiosyncrasy).

CAUSALIN is supplied as Tablets and Capsules of 7½ grs. each, in bottles of 20, 50 and 100. An ethical product reasonably priced on prescriptions at all pharmacies.

**Trademark Reg. U. S. Pat. Off.

SAMPLE SUPPLY AND LITERATURE UPON REQUEST

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